CHAPTER 4

Financial Analysis

This chapter describes project costs, revenue options, and finance plan scenarios for the locally preferred alternative (LPA) and LPA with highway phasing alternatives. The finance plan scenarios incorporate tolling of the I-5 bridges. Toll rate scenarios are shown in 2006 dollars to be consistent with past project documents; toll rates are assumed to increase at 2.5 percent per year. Capital and operating costs and revenues are addressed. Capital cost is estimated to be $3.40–$3.76 billion for the LPA and $3.16–$3.51 billion for the LPA with highway phasing, in year of expenditure dollars. The capital finance plans are summarized in Exhibit 4.4-3.

CHAPTER CONTENTS

4.1 Background 4-1
4.2 Capital Costs of the CRC Project 4-4
4.3 Capital Revenue Options 4-6
4.4 Capital Finance Plan 4-12
4.5 CRC Project Operations & Maintenance Costs 4-26
4.6 Operation and Maintenance Funding Options 4-31
4.7 Implementation Issues 4-34
4.8 Summary 4-35

4.1 Background

This section explains the capital cost estimates for the LPA and LPA with highway phasing. The capital cost estimates cover all costs of developing and constructing the highway, bridges, bicycle/pedestrian, and light rail elements of these alternatives, including engineering, project administration, right-of-way acquisition, system procurement and installation, vehicle procurement, construction of maintenance facilities, construction, and start-up costs.

The capital cost estimates used in this Final Environmental Impact Statement (FEIS), which are detailed in the August 2011 cost estimate update (CRC 2011a), reflect the results of the Washington Department of Transportation's (WSDOT) Cost Estimate Validation Process (CEVP), a risk assessment methodology that accounts for uncertainties that may cause project costs to increase. Contingency is added to the base capital cost estimate to address these potential cost increases and to produce a range of cost estimates reflecting the probability, or confidence, that the actual cost of the project

will be less than the estimated cost. The 60 percent confidence cost estimate incorporates sufficient contingency to meet expected risks, and is referred to as the Medium cost estimate. The 90 percent confidence cost estimate incorporates substantially increased contingency to address a wide range of potential cost increases, and is referred to as the High cost estimate.

Capital cost estimates are shown in year-of-expenditure dollars, which show the aggregate cost in inflated dollars. To develop the year-of-expenditure cost estimates, annual cost escalation rates were developed for major cost elements. Over the 11-year project development period, the assumed annual escalation rate for construction activities ranged from +1.49 percent to +3.62 percent.[1] The assumed annual cost escalation rate ranged from 0.72 percent to 3.30 percent for engineering and from -3.99 percent to 7.74 percent for right-of-way.

While the Columbia River Crossing (CRC) project is an integrated multimodal project, the use of some funding sources is limited by law (for example, fuel tax revenues in Oregon and Washington may only be used for highway-related improvements). Thus, the capital cost estimates are divided into highway and transit components. Many project costs are easily allocated to transit or highway because they are distinctly attributable to one of the components; for example, the cost of mainline highway improvements where there is no transit alignment is a highway cost, and the cost of light rail track is a transit cost. However, the costs of some highway and transit improvements overlap and must be allocated between these components. The allocation methodology underlying the cost estimates is summarized below.

- *Columbia River Crossing Main Bridge Structure:* Because one of the bridges crossing the Columbia River would incorporate highway and transit elements, the cost of the bridges can be apportioned into highway and transit costs. Transit's share of the bridge structure cost is the marginal cost incurred to accommodate transit, calculated as the difference between the cost of the stacked highway-transit bridge proposed for the project and the cost of an equivalent conventional box-girder bridge that does not accommodate the light rail alignment. The cost of removing the existing bridge structures is fully allocated to the highway cost. The cost of the transit tracks, electrification, and systems equipment on the main bridge is fully allocated to the transit cost. The transit structures crossing North Portland Harbor, Tomahawk Island Drive, and Hayden Island Drive are fully allocated to the transit cost; and the associated highway structures are fully allocated to the highway cost.
- *Right-of-Way:* Right-of-way acquisition costs are also apportioned between transit and highway elements. The final apportionment will be based on a real estate acquisition management plan (RAMP), agreed to by FTA and FHWA following the Record of Decision (ROD) for this FEIS.
- Engineering and Project Management/Administration: The highway and transit costs include their respective share of preliminary engineering and

1 Inflation rates are documented in CRC, Columbia River Crossing CEVP Final Report, (August 2011) and may change in later updates to the cost estimate.

final design costs, calculated by applying multipliers[2] to the construction costs of the highway and transit elements.

Based on these assumptions:[3]

- Highway capital costs include the costs of designing, acquiring right-of-way for, and constructing the highway sections of the river crossing, mainline I-5 improvements, highway interchange improvements,[4] local roadway connections to the highway interchanges, the bicycle and pedestrian improvements incorporated in the main river crossing and highway sections, and related project administration costs.
- *Transit capital costs* include the costs of designing, procuring, installing, and constructing the transit guideway and related structures (including a share of the main river crossing); stations and park and ride facilities; maintenance facilities; electrification, signalization, and communication systems and equipment; related transit improvements; vehicles; bicycle/pedestrian improvements on transit-only structures; start-up costs; improvements to the Steel Bridge, and related project administration costs.

2 The transit costs assume that preliminary engineering costs would be 3 percent and final design costs would be 7 percent of the estimated transit construction cost. The same calculation was applied to highway costs.

3 The allocation of bicycle, pedestrian other costs between highway and transit may be refined based on continuing discussions with FTA and FHWA.

4 The access road to the Clark Park and Ride, which is part of the Fourth Plain interchange improvement, is included in the transit cost.

4.2 Capital Costs of the CRC Project

Exhibit 4.2-1 shows the range of capital cost estimates in year-of-expenditure dollars for the LPA and LPA with highway phasing. The difference between the capital costs of the LPA and LPA with highway phasing represents the cost of improvements that would be deferred if the total amount of revenue needed for the LPA were not available prior to the start of construction. In such a circumstance, no transit improvement would be deferred. Thus, the transit elements in the LPA and LPA with highway phasing are identical, as are their capital costs. Highway elements proposed to be deferred include improvements to I-5 ramps at Victory Boulevard, the flyover ramp at Marine Drive, and the northern section of the SR 500 interchange. Thus the cost differences (and financial plan differences) between the LPA and LPA with highway phasing illustrate the impact during the initial construction period of deferring these highway elements to a future date. The deferred improvements would incur increased escalation cost as a result of the deferral, and their actual year-of-expenditure cost would be higher and would depend on the length of the deferral.

Exhibit 4.2-1
Capital Cost Estimates by Alternative in Millions of Year-of-Expenditure Dollars

	Medium Cost Estimate[a]	High Cost Estimate[b]
LPA		
Transit[d]	$856.3	$944.3
Highway	$2,539.7	$2,819.3
LPA Total	**$3,396.0**	**$3,763.6**
LPA with Highway Phasing		
Transit[c]	$856.3	$944.0
Highway	$2,301.0	$2,563.8
LPA with Highway Phasing Total	**$3,157.3**	**$3,507.8**

Source: Columbia River Crossing CEVP Final Report, August 2011.

a Medium cost estimate assumes the 60% confidence cost estimate.

b High cost estimate assumes the 90% confidence cost estimate.

c The transit elements of the LPA and LPA with highway phasing include interim borrowing cost based on the assumed availability of New Starts Funds.

d The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

As shown in Exhibit 4.2-2, the DEIS showed Medium and High estimates of capital costs in year-of-expenditure dollars for the supplemental and replacement bridge alternatives, the full-length light rail and bus rapid transit alternatives, and two minimum operable segments for each of the transit components.

Exhibit 4.2-2

Capital Cost Estimates of DEIS Alternatives[a] In Billions of Year-of-Expenditure Dollars

DEIS Alternative	Alternative 2 Replacement Bridge/BRT	Alternative 3 Replacement Bridge/LRT	Alternative 4 Supplemental Bridge/BRT	Alternative 5 Supplemental Bridge/LRT
Medium Cost Estimate				
Full Length Alternatives[b]	$3.54-$3.71	$3.72-$3.90	$3.41-$3.60	$3.58-$3.77
Minimum Operable Segments[c]	$3.26-$3.32	$3.37-$3.43	$3.13-$3.19	$3.21-$3.28
High Cost Estimate				
Full Length Alternatives[b]	$3.74-$3.92	$3.92-$4.09	$3.59-$3.78	$3.76-$3.95
Minimum Operable Segments[c]	$3.47-$3.50	$3.55-$3.61	$3.32-$3.35	$3.45-$3.49

a Costs of full-length alternatives from DEIS Exhibit 4.2-1 and costs of minimum operable segments from DEIS Exhibit 4.2-3.

b Full-length alternatives include termini at Kiggins Bowl or Lincoln Street.

c Minimum operable segments include termini at Mill Plain and Clark College.

Costs for the replacement bridge with full-length bus rapid transit alternative ranged between $3.5 billion and $3.9 billion in year-of-expenditure; and between $3.3 billion and $3.5 billion for the minimum operable segment options. Costs for the replacement bridge with full-length light rail transit alternative ranged between $3.7 billion and $4.1 billion in year-of-expenditure; and between $3.4 billion and $3.6 billion for the minimum operable segment options. Costs for the supplemental bridge with full-length bus rapid transit alternative ranged between $3.4 and $3.8 billion in year-of-expenditure; and between $3.1billion and $3.3 billion for the minimum operable segment options. Costs for the supplemental bridge with full-length light rail transit alternative ranged between $3.6 billion and $4.0 billion in year-of-expenditure; and between $3.2 billion and $3.5 billion for the minimum operable segment options. The cost estimates in this FEIS build on the information documented in the DEIS, but have been updated for the LPA and LPA with highway phasing alternatives based on the greater level of design, project development scheduling, and cost estimating performed on the LPA.

The current total capital cost estimates for the LPA range between $3.40 billion and $3.76 billion in year-of-expenditure dollars. In comparison, the LPA with highway phasing is currently estimated to cost between $3.16 billion and $3.51 billion in year-of-expenditure dollars. Thus, the deferral of the Victory Boulevard ramp, the flyover ramp at Marine Drive, and the northern section of the SR 500 interchange would reduce the cost of the LPA with highway phasing by about $0.24 to $0.25 billion compared to the LPA.

4.3 Capital Revenue Options

This section identifies the federal and state funding programs potentially applicable to the CRC project. Many of these funding sources can be used to pay highway, transit, and bicycle/pedestrian costs. However, several are subject to legal requirements or restrictions that limit their use to certain project components. Exhibit 4.3-1 enumerates the federal funding programs potentially applicable to the CRC project and the restrictions, if any, on their use. Exhibit 4.3-2 provides similar information on state and regional funding programs. The funding programs currently incorporated in the finance plan scenarios are identified in Section 4.4.2; the final list of funding programs used in the CRC finance plan will result from continued discussions, during final design, with stakeholders and legislative committees.

Exhibit 4.3-1
Summary of Revenue and Financing Options: Federal Programs

Funding Source	Highway Eligible	Transit Eligible[a]	Comment
Federal Discretionary Funds			
Projects of National and Regional Significance	x		May be a criteria-based administrative award program or a congressional appropriation.
Reauthorization Bill: High Priority Projects	x	x	Can be any type of improvement specified in reauthorization act.
Transportation Investment Generating Economic Recovery (TIGER) program	x	x	
Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) program		x	
Interstate Maintenance Discretionary Funds (IMD)	x		
Value Pricing Pilot Program	x		
New Starts Capital Program (Section 5309)		x	
Transportation Community and System Preservation Program Funds (TCSP)	x	x	
Innovative Bridge Research and Deployment Program (IBRD)	x		
Highways for LIFE Program (HfL)	x		
Alternative Transportation in Parks and Public Lands Funds		x	
Discretionary Bus and Bus Facilities Funds (Section 5309-B)		x	
Federal Formula Funds			
National Highway System Funds (NHS)	x	x	Certain conditions required for transit uses.
Surface Transportation Program Funds (STP)	x	x	
Interstate Maintenance Funds (IM)	x		
Fixed Guideway Modernization Funds (Section 5309)		x	Limited to capital improvement or preventive maintenance for existing fixed guideways. Not available until eighth year of operations.
National Highway Traffic Safety Administration Grants (NHTSA)	x		
Congestion Mitigation Air Quality Funds (CMAQ)	x	x	Limited to activities with air quality benefits. Not eligible for major highway expansion.

Funding Source	Highway Eligible	Transit Eligible[a]	Comment
Urbanized Area Formula Grants (Section 5307)		x	
Jobs Access and Reverse Commute Funds (JARC Section 5316)		x	Targeted for particular transit operations.
New Freedom Funds (Section 5317)		x	Targeted for particular transit operations
Federal Financing Programs			
Transportation Infrastructure Finance and Innovation Act (TIFIA)	x	x	Loan and credit enhancement program.
Grant Anticipation Revenue Vehicles (GARVEE Bonds) or Grant Anticipation Notes (GANs)	x	x	Allows future federal grants to be bonded.

Note: This table provides a comprehensive list of funding programs; inclusion in the list does not mean a funding source is planned for use.

a Parentheses indicate that the funding source depends on specific conditions or the authority granted is future legislation.

Exhibit 4.3-2

Summary of Revenue and Financing Options: State and Regional Programs

Funding Source	Highway Eligible	Transit Eligible[a]	Comment
State Funds			
Fuel Tax Revenue Oregon and Washington	x		Oregon and Washington state constitutions restrict use of these revenues.
Oregon Motor Carrier Taxes and Fees and DMV Fees	x		Restricted by Oregon Constitution.
Oregon Lottery Funds	x	x	
Washington Licensing Fees: Trucks, Buses, For-Hire/Passenger Vehicles	x	(x)	Uses described in statute.
Washington Sales and Use Tax	x	x	
Public Private Partnerships	x	x	
Real Property Contributions	x	x	Limited opportunities.
Tolls	x	(x)	Use in Oregon limited to highway purposes by Oregon Constitution. Use in Washington specified by legislature.
Regional Funds			
Existing and Additional Revenues Available to TriMet	(x)	x	Can be used for certain road purposes, but not applicable to CRC highway costs.
Existing and Additional Revenues Available to C-TRAN		x	Existing sales and use tax can be increased with voter approval. Additional funding sources are provided by Washington's High-capacity Transit (HCT) Act.
Transportation Benefit District (TBD) Revenues	x	x	There are several funding sources available to TBDs; most require voter approval.

Note: This table provides a comprehensive list of funding programs; inclusion in the list does not mean a funding soured is planned for use.

a Parentheses indicate that the funding source depends on specific conditions or the authority granted is future legislation.

4.3.1 Federal Revenue and Financing Options

Federal Discretionary Funds

Federal transportation funds include (i) formula funds, those funds apportioned to states or regions on the basis of a formula set by law and (ii) discretionary funds, those allocated to projects on a case-by-case basis. There are two basic categories of discretionary federal transportation funds: (i) those allocated to projects by the U.S. Department of Transportation (USDOT), usually based on criteria set forth in law or regulation, and (ii) those allocated to projects through Congressional actions, usually in transportation reauthorization acts or annual appropriation bills. WSDOT, the Oregon Department of Transportation (ODOT), the Tri-County Metropolitan Transportation District (TriMet), and the Clark County Public Transit Benefit Area Authority (C-TRAN) have each received discretionary transportation funds, both through USDOT and by congressional-action.

The Section 5309 New Starts program provides federal discretionary grants to construct fixed-guideway transit systems, such as light rail transit. The amount of New Starts funds available nationally is established in each federal transportation reauthorization act. The statutory authority in 49 U.S.C. Section 5309(d)(3) prescribes a rating process, administered by FTA, to determine if a project merits New Starts funding. The amount of local funding needed is based on the Federal program requirements for local matching funds. The CRC project received an overall rating from FTA of Medium-High when it entered preliminary engineering. FTA will re-rate the project at various points during its development. The finance plan scenarios shown in this FEIS differ slightly from the finance plan reviewed by FTA during its most recent rating process; the differences primarily are a consequence of refined assumptions regarding toll bonding capacity.

If approved for New Starts funding, the CRC project would receive a Full Funding Grant Agreement (FFGA) that establishes the maximum amount of New Starts funds for the project and the terms and conditions of receiving the funds. The annual amount of New Starts funding actually made available to the CRC project would be set through the congressional appropriation process and generally guided by the amount proposed in the FFGA.

Federal Formula Funds

ODOT, WSDOT, C-TRAN, TriMet, Metro, and the Southwest Washington Regional Transportation Council (RTC) receive transportation funding from a variety of federal formula grant programs. In an urban area, the metropolitan planning organizations (MPOs) program these funds to specific eligible uses. In the Portland-Vancouver region, this is accomplished through Metro's or RTC's Metropolitan Transportation Improvement Program (MTIP) processes. State and federal funds are also programmed in ODOT's and WSDOT's State Transportation Improvement Programs (STIPs). While federal formula funds potentially could be used for the CRC project, many of these funds are currently programmed for other uses, and the finance plan for the CRC project does not anticipate reprogramming of these funds.

Federal Financing Programs

The project may employ Grant Anticipation Revenue Vehicle (GARVEE) bonds[5] to match the availability of New Starts funds with the cash-flow needs of light rail construction. Through the use of GARVEEs, the New Starts funds provided in the FFGA for the CRC project could be pledged to repay noteholders and the proceeds would be used to pay construction costs. To secure a better interest rate, additional revenues may be pledged in the event that future New Starts funds are not available. TriMet has used a similar approach to help fund portions of the South Corridor project, the Wilsonville to Beaverton Commuter Rail Project, and the Portland-Milwaukie Light Rail Project.

The finance plan may also incorporate credit assistance from the Transportation Infrastructure Finance and Innovation (TIFIA) program. TIFIA is a federal credit program for transportation projects of national or regional significance under which USDOT may provide direct loans, loan guarantees, or standby lines of credit, at times at better interest rates or terms than otherwise available. TIFIA assistance is awarded through a competitive nationwide process based on established criteria. While not a grant, a TIFIA award adds capital funding by increasing the borrowing capacity of the net toll revenues.

4.3.2 State Funding Options

In addition to federal formula funds, ODOT and WSDOT also administer state funding programs, primarily from fuel taxes, fees on motor carriers, and licensing and registration fees. Prior to issuance of this FEIS, both ODOT and WSDOT committed state funds to the CRC project for preliminary engineering and other project development activities. The funding plan calls for additional commitments of state transportation funds. New revenues may be created by increasing one or more of the statewide fees or taxes. The actual package of taxes, fees, and other revenue sources that may be used to fund each state's share of CRC capital costs will be developed through their legislative processes. Oregon's 2011 Legislative Assembly established an interim legislative committee to review information and report to the Legislature by February 2012 on the Columbia River Crossing cost estimates, procurement schedule and financing plans as a precursor to legislative consideration of the state's contribution. In Washington, the governor has created the Connecting Washington Task Force, which is charged with developing a 10-year investing and funding plan for the state's transportation system, including the CRC project, and presenting it to the 2012 Legislature.

4.3.3 Toll Bond Proceeds and Revenues

Both the LPA and LPA with highway phasing alternatives incorporate two-way tolling on the I-5 bridges. 23 U.S.C 129(a)(1)(C) permits states to toll a bridge on the Interstate System when the bridge is either being replaced or reconstructed, as is the case for the CRC project. Federal statutes delegate to the states decisions regarding toll rate schedules and the time when tolls can first be charged, except that tolls may not be imposed prior to awarding the initial construction contract. The decision as to the time when tolls are removed is also reserved for the states. As a pre-requisite to tolling the I-5

5 23 USC 122(a) and (b).

bridges, WSDOT and ODOT must enter into a tolling agreement with FHWA. This tolling agreement will require that toll revenues be first used for debt service and the operation and maintenance of the bridge. The use of toll revenues exceeding the amount needed for debt service or operations and maintenance is subject to state laws and regulations.

Under current state statutes, the toll rate schedule for the I-5 bridges (i.e., the toll rates by time of day, day of week, vehicle classification, and applicable discounts, if any) must be formally set by the state transportation commissions through specific processes set in state law and further detailed in a bi-state agreement between WSDOT and ODOT. At the time of this FEIS, ODOT has general statutory authority to toll facilities it owns, including the I-5 bridges, but does not operate any toll facilities. Under Washington law, WSDOT is provided tolling authority on a project by project basis. WSDOT currently operates two toll facilities (Tacoma Narrows Bridge and SR 167 high occupancy toll [HOT] Lane) and will open a third toll facility (SR 520) in late 2011. WSDOT is not currently authorized to toll the I-5 bridges. WSDOT anticipates seeking such authority in the 2012 or, as a secondary option, the 2013 legislative session. The bi-state agreement between ODOT and WSDOT will be executed following WSDOT's authorization to toll the I-5 bridges and would include any agreed-upon refinements to project governance.

This analysis examines the potential levels of project funding from tolling. It considers several tolling scenarios that differ by (i) the toll rate schedule (i.e., the toll rate for a given hour of the day for a particular class of vehicles) and (ii) whether two-way tolling starts after completion of the new southbound I-5 bridge in July 2018 (post-completion tolling) or earlier (pre-completion tolling). The analysis examines three prototypical toll rate schedules including the Base toll rate schedule (shown as Schedule 1 in Exhibit 4.3-3, below), which is used to forecast the traffic and traffic-related impacts reported in Chapter 3, and two variations on the Base toll rate schedule. The formal toll rate-setting process may consider other toll rate schedules beyond those reported here.

Exhibit 4.3-3 provides the assumed weekday toll rate schedules for passenger cars by time period. Toll rates are expressed in 2006 dollars to be consistent with previous studies. These rates are assumed to be increased on average at 2.5 percent annually.[6] Thus, for example, the peak-period toll rate for an automobile with a transponder under the Base toll rate schedule ($2.00 in 2006 dollars) would be $2.21 in 2010 dollars and $2.69 in 2018 when the new southbound I-5 bridge is scheduled to open for traffic.

The rates shown are one-way tolls. A round-trip would pay tolls in each direction at the appropriate rate for the time period of each crossing. These toll rate schedules are applicable to both the LPA and LPA with highway phasing alternatives.

6 Toll rate increases must be approved in accordance with the processes set forth in a bi-state tolling agreement, and under current state law will require approval by the Oregon Transportation Commission and Washington Transportation Commission.

Exhibit 4.3-3
Toll Rate Schedule Scenarios - Toll Rates In Each Direction[a,b,c,d]

Time Period	Post-completion Toll Rate Structure for Autos[e]			Pre-completion Toll Rate Structure for Autos[f]
	Schedule 1 Base	Schedule 2 Added Price Point	Schedule 3 1.5X Base	
12 AM–5 AM	$1.00	$1.00	$1.50	$0.00
5 AM–6 AM	$1.50	$1.50	$2.25	$1.50
6 AM–7 AM	$2.00	$2.00	$3.00	$2.00
7 AM–9 AM	$2.00	$2.50	$3.00	$2.00
9 AM–10 AM	$2.00	$2.00	$3.00	$2.00
10 AM–3 PM	$1.50	$1.75	$2.25	$1.50
3 PM–4 PM	$2.00	$2.00	$3.00	$2.00
4 PM–6 PM	$2.00	$2.50	$3.00	$2.00
6 PM–7 PM	$2.00	$2.00	$3.00	$2.00
7 PM–8 PM	$1.50	$1.50	$2.25	$1.50
8 PM–12 AM	$1.00	$1.00	$1.50	$0.00
Pay-by-plate Surchargeg	$1.22	$1.22	$1.22	$1.22

a Toll rates are shown in 2006 dollars. Toll rates are assumed to escalate at 2.5% per year. Thus, for example, a $2.00 toll in 2006 dollars would be about $2.21 in 2010 dollars.

b Medium trucks, defined as vehicles with three or four axles, are assumed to have a toll rate that is twice the rates shown above for autos.

c Large trucks, defined as vehicles with five or more axles, are assumed to have a toll rate that is four times the rates shown above for autos.

d The actual toll rates imposed through the formal toll setting may differ from these scenarios.

e Toll rates charged after the new southbound I-5 bridge is opened for traffic operations.

f Toll rates on existing I-5 bridges, if tolls were imposed prior to completion of the new southbound I-5 bridge.

g The pay-by-plate surcharge, shown in 2006 dollars, is applicable to all types of vehicles and does not change by time of day. The surcharge represents an average of the anticipated added cost to collect these tolls compared to costs for vehicles with transponders. The surcharge would change as the cost to collect these tolls increases; the escalation rate is anticipated to be lower than the cost of inflation.

Toll rates for commercial vehicles are assumed to be proportionately greater than for passenger cars, roughly based on the number of axles. Many toll facilities follow this approach including, for example, the Tacoma Narrows Bridge. For the purposes of this analysis, it is assumed that large-sized commercial vehicles (five or more axles) would pay four times the passenger car rate for the given time of day, and medium-sized commercial vehicles (three- or four-axle vehicles) would pay two times the passenger car rate for the given time of day. The actual toll rates for commercial vehicles will be determined in the formal toll rate–setting process.

4.3.4 Regional Funding Options[7]

The capital finance plan for the CRC project does not rely on using regional funding; regional funding is preserved for transit operations and maintenance needs. Future refinements to the capital finance plan may employ regional funds for certain supplemental improvements.

7 Regional funding options include local transportation taxes and fees (such as TriMet's payroll tax proceeds or C-TRAN sales and use tax proceeds) and federal transportation grant funds allocated to the Portland/Vancouver region by formula and programmed by regional governmental entities for specific uses (such as Section 5307 Urbanized Area Formula Grants provided to TriMet or C-TRAN).

4.4 Capital Finance Plan

Sections 4.1 through 4.3 explain the elements of the capital finance plan for the CRC project. This section merges these elements into capital finance plan scenarios for the LPA and LPA with highway phasing. A range of finance plan scenarios is shown for each alternative, reflecting the cost estimates and the range of available funding. These capital finance plan scenarios illustrate the basic financial trade-offs associated with the alternatives and funding sources. The actual amount of funds derived from each source depends on the amount approved by the applicable approval body.

4.4.1 Integrated Multimodal Finance Plan

The financial plan for the CRC project is rooted in an integrated, multimodal project finance plan facilitated by a federal statute requiring USDOT to take into account the entire funding plan, including local highway revenues, in rating the light rail transit component of the CRC project for New Starts funding.[8] The statute also provides that the local match requirement for New Starts funds can be met by the entirety of local funding included in the integrated finance plan. The finance plan also accounts for (i) the timing of when funding commitments are established and (ii) the cash flow schedule for when funds are actually provided to pay project costs. The assumed schedule for these activities is shown in Exhibit 4.4-1. The timing of when funds are available to pay project costs (i.e., cash flow) is determined by authorization, appropriation, and administrative provisions specific to each funding source; key cash flow assumptions for each funding source are explained in Section 4.4.2.

Exhibit 4.4-1
Assumed Capital Finance Plan Implementation Schedule

Activity	Date
Washington Legislative Approval Authorizing Tolling for the CRC Project	March 2012
Submit Letter of Interest for TIFIA Loan	2012[e]
Washington Legislative Approval of State Funding Contribution	March 2012[c,d]
Oregon Legislative Approval Committing State Funding Contribution	March 2012[c]
Highway Discretionary Funding Program Enacted in Transportation Reauthorization Act[a]	October 2013
Initial Construction Contract Executed	October 2013
FTA Approval of Full Funding Grant Agreement for Section 5309 New Starts Funds[b]	September 2013
If applicable, Start of Pre-completion Tolling on Existing Bridges [e]	July 2014
Start Post-completion Tolling on New Southbound Bridge	July 2018
Light Rail Construction Complete/Service Starts	July 2019
New Northbound Bridge Open	July 2020

a Highway discretionary funding may come from a congressional action and/or approval of an administrative program for which the CRC project is eligible.

b Assumes all local matching funds for FFGA are committed in 2012.

c As a secondary option, the legislative request would be made in the 2013 session. If legislative approvals are deferred until the 2013 session, the scheduled dates for Final Design and the FFGA will change.

d If legislative approval includes referral to voters, state funding commitment will not be effective until voter approval.

e Submission date for TIFIA letter of interest depends on schedule for FHWA annual solicitation process.

8 The Consolidated Appropriations Act, 2010, Section 173 (H.R. 3288, December 9, 2009) states as follows: "Hereafter, for interstate multi-modal projects which are in Interstate highway corridors, the Secretary shall base the rating under section 5309(d) of title 49, United States Code, of the non-New Starts share of the public transportation element of the project on the percentage of non-New Starts funds in the unified finance plan for the multi-modal project: Provided, That the Secretary shall base the accounting of local matching funds on the total amount of all local funds incorporated in the unified finance plan for the multi-modal project for the purposes of funding under chapter 53 of title 49, United States Code and title 23, United States Code: Provided further, That the Secretary shall evaluate the justification for the project under section 5309(d) of title 49, United States Code, including cost effectiveness, on the public transportation costs and public transportation benefits."

4.4.2 Assumptions Regarding Anticipated Funding Sources

Various finance plan scenarios are shown for each of the alternatives, for both the medium and high capital cost estimates. The scenarios shown in this FEIS were selected to illustrate the basic financial trade-offs between funding concepts, and will be refined during the final design stage of the project.

The proposed funding sources and their assumed contributions to the finance plan scenarios shown below represent the starting point for an action plan to secure funding commitments. As is customarily the case, procuring these funds depends on future actions by federal and state legislators and administrators. The proposed sources and amounts of funding may need to be adjusted depending on the actions taken.

Federal Discretionary Highway Funds

The funding plan anticipates seeking an allocation of funds from the Projects of National and Regional Significance (PNRS) program. If PNRS funds are not sufficiently available for the CRC project, other discretionary highway funds may be sought, such as High Priority Projects, TIGER grants, and Interstate Maintenance Discretionary funds. If insufficient highway discretionary funds are secured for the project, construction may have to be phased and/or additional capital funds would be required from state sources and/or tolling. The finance plan scenarios shown in Section 4.4.3 assume the following:

- The LPA with highway phasing finance plan scenarios assume $400 million in discretionary highway funds would be secured in the upcoming reauthorization period and provided in four $100 million installments from federal fiscal year (FFY) 2014 through FFY 2017.
- The LPA funding scenarios also assume $400 million in discretionary highway funds provided in four $100 million installments from FFY 2014 through FFY 2017. However, some LPA funding scenarios also assume an additional $100 million highway discretionary action (for a total of $500 million in highway discretionary funds) in four $25 million installments, from FFY 2018 through FFY 2021, to fund the later highway elements of the LPA.
- For both alternatives, highway discretionary funds are anticipated to be used to pay project costs on a cash basis.

Section 5309 New Starts Funds

The finance plan scenarios anticipate securing Section 5309 New Starts funds, discussed in Section 4.3.1, to pay the final design and construction costs of the light rail element of the CRC project. The project is following FTA's New Starts process to ensure its eligibility for New Starts funds. The finance plan employs the provisions of Section 173 of the Consolidated Appropriations Act, 2010, to meet FTA New Starts rating criteria and to provide local match for the New Starts funds.

The finance plan scenarios shown in Section 4.4.3 are based on the following assumptions:[9]

9 The assumptions regarding the amount and schedule of New Starts funds requested for the CRC project may refined based on further financial planning,

- The estimated amount of New Starts funds that CRC is seeking for the project is $850 million.
- An estimated maximum of $100 million per year was used for the annual payout of New Starts funds in the FEIS. FTA will revise the New Starts payout schedule at the time a FFGA is negotiated.
- It is assumed that annual New Starts appropriations will be $100 million. There are years in which the assumed amount of New Starts funds available would be less than the amount needed to meet project costs.[10] The finance plan scenarios incorporate an interim borrowing program (i.e. GANs) to address these cash-flow deficits. Under such a program, the project would borrow to meet the cash-flow needs of the light rail element, pay interest costs for such borrowings, and repay the borrowings with New Starts funds appropriated later. The interest costs paid on the GANs are project costs, and are eligible to be reimbursed with future New Starts funds, to the extent there are sufficient New Starts funds committed to the project.

ODOT/WSDOT Funds

Prior to this FEIS, WSDOT and ODOT collectively committed about $147 million in state funds to the CRC project to pay for preliminary engineering and subsequent project development activities[11]. The funding plan seeks additional funds from ODOT and WSDOT. The actual package of formula federal funds, taxes, fees, and/or other revenue sources that may be used to provide the additional ODOT/WSDOT funds must be developed through future state legislative processes and/or allocations of existing funds. Depending on the source and timing of funds, state funds may be provided by a combination of cash grants and bond proceeds.

The finance plan scenarios shown in Section 4.4.3 are based on the following assumptions:

- Both the LPA and the LPA with highway phasing funding scenarios assume an additional $900 million aggregate contribution from ODOT and WSDOT.[12]
- In all scenarios, the state contribution is used prior to the toll bond proceeds.

Toll Revenues and Toll Bond and Loan Proceeds

Toll revenues are used to fund the CRC project by (a) pledging toll revenues to repay bonds and other loans and using the proceeds to pay project costs and/or (b) directly using the toll revenues on a cash basis to pay project costs.

Initial Funding Capacity of Post-completion Toll Revenues

The majority of toll funding for the project comes from borrowings that are repaid with a multiyear stream of net toll revenues. Net toll revenues exclude the toll revenues used to pay the operating and maintenance costs of toll collection and the facility. In addition, net toll revenues must provide "coverage" of bond debt service

10 In addition, the New Starts funds appropriated for the project are generally not available to pay project costs until several months into the federal fiscal year, which adds to the cash-flow deficit of the project.

11 The states also provided additional funds to cover the early planning for the project including preparation of the DEIS. Since the funding scenarios shown in this FEIS begin with the initiation of preliminary engineering (PE), the costs incurred and revenues expended prior to PE are not incorporated in the funding scenarios.

12 This is in addition to the state funds committed prior to issuance of this FEIS.

to assure there will be sufficient net revenues to pay debt service. This coverage reduces the amount of project funding available from the net toll revenues.[13]

Toll bonds and loans would be issued prior to opening the new bridges and would require a portion of the proceeds to be used to pay interest on the bonds until toll collection starts (i.e., capitalized interest). While the traffic forecast assumes toll rates escalate at 2.5 percent per year, *the estimated financial capacity of the toll bonds and loans do not rely on any escalation in toll rates after the start of post-completion tolling in July 2018*. This is a conservative assumption to reduce the financial risk of toll-backed borrowings.

The funding capacity of a toll rate schedule depends on the financing structure employed, including the timing of the bond issuances; the back-up pledge (if any) provided; and the type of bonds issued. This analysis is used to estimate a baseline financing structure in which net toll revenues are pledged to repay:

- A $500 million TIFIA loan
- The balance in toll bonds backed by a state general obligation and/or highway trust fund pledge

As explained earlier, TIFIA is a federal credit program awarded to transportation projects on a competitive basis. While the baseline financing structure assumes a $500 million TIFIA loan, the final mix and amount of TIFIA loans and toll bonds will depend on the ultimate availability of TIFIA funds and the size of the project. The project sponsors would seek the maximum appropriate TIFIA award available to the CRC project; such an award may lower the proposed amount of federal discretionary highway funds.

Exhibit 4.4-2 shows the range of the initial project funding contribution from each toll rate schedule assuming the baseline financing structure. The impacts of the alternative financing structures are discussed later in this chapter. The estimated funding capacities shown in Exhibit 4.4-2 are the amount of bond proceeds available to pay for project design and construction after deducting bond proceeds used for capitalized interest, bond issuance costs, and reserves. The funding capacities assume that state-backed bonds would be repaid in 30 years and the TIFIA loan would be repaid 35 years after project completion.

Funding capacity is provided as a range to reflect the possibility that revenue collections facility operations and maintenance costs, financing costs, and timing of the toll bonds, may differ from the assumptions used in the financial forecasts. The High estimate in Exhibit 4.4-2 reflects the traffic volumes assessed in Chapter 3 of this FEIS. The Medium estimate reflects traffic volumes about 7 to 8 percent below the High estimate, and the Low estimate reflects traffic volumes about 15 percent below the Medium estimate. To conservatively appraise financial feasibility, the financial plan scenarios discussed later in this section are based on the Low estimates of borrowing capacity shown in Exhibit 4.4-2.

13 A 25 percent coverage factor is assumed for state-backed debt (i.e., net toll revenues must be at least 1.25 times debt service each year) and an aggregate 10 percent coverage factor is assumed for TIFIA loans (i.e.; net toll revenues must be at least 1.1 times aggregate debt service each year).

Exhibit 4.4-2

Initial Borrowing Capacity of Toll Rate Schedules with Baseline Financial Structure in Billions of Year-of-Expenditure Dollars[a,b]

Point in Range[c]	Post-completion Tolls[d]			Pre-completion Add-on[e]
	Schedule 1	Schedule 2	Schedule 3	
Low	$0.932	$1.005	$1.197	$0.204
Medium	$1.106	$1.195	$1.428	$0.249
High	$1.181	$1.281	$1.574	$0.292

a Net bond proceeds for the design and construction costs; excludes proceeds used for issuance costs, capitalized interest, and reserves.

b While the project sponsors will seek the maximum appropriate TIFIA loan, the estimates in this exhibit assume a $500-million TIFIA loan combined with f state-backed senior bonds.

c A range of funding is shown for each schedule, reflecting the potential variability in traffic forecasts, financing assumptions, and schedule.

d Post-completion toll rate schedules assume that toll collection starts when the new southbound I-5 bridge opens for general traffic operations.

e Pre-completion funding capacity assumes that (a) two-way tolls start in July 2014 and pre-completion tolling ends when the new southbound bridge opens in 2018 and (b) these toll revenues are used on a cash basis. Thus, this amount is an add-on to the post- completion toll bond capacity for each of the toll rate schedules.

A comparison of the post-completion toll rate schedules illustrates the sensitivity of project funding levels from tolls to the differences in the toll schedules. The $0.50 higher rate in the 2-hour peak of the morning and afternoon peak periods in Schedule 2 compared to Schedule 1 produces $74 million to $98 million more project funding. The 50 percent higher toll rates in Schedule 3 compared to Schedule 1 produce an additional $248 million to $368 million in project funding.

Alternative Financial Structures

While Exhibit 4.4-2 uses the baseline financial structure, the actual financial structure employed will depend on the state and federal authorizations, market conditions, and other technical factors at the time bonds are issued. This could increase or decrease the project funding available from tolls. To illustrate these impacts, a sensitivity analysis was undertaken to assess the impacts of alternative financial structures. The sensitivity analysis focused solely on Toll Rate Schedule 1 and employed only the low estimate of net toll revenues from these tolls.

The sensitivity analysis found that incorporating TIFIA in the financial structure substantially increases project funding. For example, a state-backed bond without TIFIA would produce about $142 million less project funding than an equivalent state-backed bond combined with a $500 million TIFIA loan. Because the amount of project funding available from net toll revenues increases as the size of the TIFIA loan increases, the project sponsors will seek to maximize the use of TIFIA loans. State backing of the bonds also helps to increase project funding. A structure that combines bonds that do not have state backing with a $500 million TIFIA loan produces about $37 million less project funding than a financial structure that combines state-backed bonds with an equivalent $500 TIFIA million loan.

Pre-completion Toll Revenues

Some finance plan scenarios include tolling the existing I-5 bridges prior to the completion of the new southbound bridge, which is referred to as pre-completion tolling in this FEIS. By providing early toll revenues for project construction, pre-completion tolling can be used to provide additional revenues for project construction, reduce the amount of toll bond proceeds used to pay capitalized interest, and/or reduce the long-term post-completion toll rates. The $204 million to $292 million potentially available from pre-completion tolling shown in Exhibit 4.4-2 assumes:

- The pre-completion toll rate schedule shown in Exhibit 4.3-3.
- Pre-completion tolling would start, if required, as early as mid-2014 and continue until the new southbound bridge opens in mid-2018, when post-completion tolling begins.
- Facility operations and maintenance costs for the existing bridges are funded by ODOT and WSDOT as currently, and not from toll revenues.
- Net toll revenues from pre-completion tolling would pay project costs on a cash (pay-as-you-go) basis. Thus, for this analysis, the potential pre-completion tolling contribution can be viewed as an add-on to the post-completion funding capacity for each of the tolling scenarios.[14]

While Exhibit 4.4-2 shows a range of forecasts for pre-completion toll revenues, the finance plan scenarios in Section 4.4.3 use only the Low estimate.

Residual Toll Revenues

Because the toll bonding scenarios assume (i) a portion of the net toll revenues would provide coverage to supply a funding cushion for debt service and operating costs and (ii) the initial toll bonds would not rely on toll revenues from toll rate increases imposed after the opening of the new southbound bridge, there would be residual toll revenues available each year after the southbound bridge opens for traffic. A portion of these residual toll revenues would be required to pay for ongoing repair and replacement costs and also to fund prudent reserves for purposes such as operations and maintenance, repair and replacement, and toll rate stabilization. However, residual toll revenues not needed for repair and replacement costs or reserves could be used to pay for later stages of capital construction, including project elements that were deferred due to initial budget constraints. Residual toll revenues made available for capital construction could be used on a cash basis, the assumption used in this FEIS, or capitalized through future borrowings after the toll rate increase is imposed. Alternatively, these revenues may be used to accelerate repayment of toll bonds and/or mitigate the need for future toll rate increases.

4.4.3 Capital Finance Plan Scenarios

This section describes finance plan scenarios for the medium- and high-cost LPA and LPA with highway phasing alternatives. These funding scenarios were developed based on the assumptions and data provided above. All of the finance plan scenarios employ the low estimates of net toll revenues for the applicable toll rate schedule and the baseline financial structure. A wide range of scenarios are possible; those shown below were selected to illustrate basic trade-offs. The finance plan scenarios will be further refined during final design.

14 Pre-completion tolling could also be used as part of a bond program with post-completion tolling.

The finance plan scenarios show the year-by-year project costs, including interim borrowing requirements, and each of the project funding sources for the entire project development and construction period. Costs and funding are shown on a FFY basis. Costs and funding shown exclude those for alternatives analysis, preparation of the DEIS, and other activities between FFY 2004 and the start of preliminary engineering in FFY 2010. The finance plan scenarios shown in this FEIS differ slightly from the finance plan reviewed by FTA during its most recent rating process; the differences primarily reflect or are a consequence of refined assumptions regarding toll borrowing capacity. Exhibit 4.4-3, below, summarizes the funding plans for each of the scenarios discussed below.

Exhibit 4.4-3

Summary of Capital Finance Plan Scenarios in Millions of Year-of-Expenditure Dollars[a]

		LPA		LPA with Highway Phasing	
	Revenue Source	Medium Cost Estimate	High Cost Estimate	Medium Cost Estimate	High Cost Estimate
F	Federal Discretionary Highway	$400	$500	$400	$400
A	ODOT/WSDOT: Existing	$147.3	$147.3	$147.3	$147.3
F	ODOT/WSDOT: Additional	$900	$900	$900	$900
F	Post-completion Toll Bond and Loan Proceeds[a]	$918.2–$1,140.0	$1,161.9	$901.3	$918.2–$1,166.2
F	Residual Toll Revenues[a]	$0–$17.4	$0	$0	$44.2-$87.8
F	Pre-completion Toll Revenues [a]	$0-$204.4	$204.4	$0	$0 - $204.4
F	Section 5309 New Starts Funds[b]	$808.7	$850.0	$808.7	$850.0
	Total Revenues	**$3,396.0**	**$3,763.6**	**$3,157.3**	**$3,507.8**

Notes: A = currently available and committed to project; F = subject to future approvals; not currently available.

a The amounts shown for post-completion toll bond proceeds, residual toll revenues, and pre-completion toll revenues in all finance plan scenarios are based the Low forecast of toll revenues.

b The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

LPA with Highway Phasing Alternative

Exhibit 4.4-4 shows a finance plan scenario for the LPA with highway phasing alternative assuming the Medium capital cost estimate and the Base toll rate schedule (Schedule 1). This is the least costly alternative considered in this FEIS. As a result, the amount of post-completion toll bond/loan proceeds required for this scenario ($901 million) is less than the estimated borrowing capacity of the Base (Schedule 1) toll rate schedule. No use of pre-completion tolling or residual tolls is required in this scenario. The scenario requires $400 million in federal highway discretionary funding. In addition, while this FEIS assumes $850 million of New Starts funding is the estimated maximum amount potentially available to the CRC project, the finance plan scenario shown in Exhibit 4.4-4 proposes only about $809 million of New Starts funds for the light rail extension, because that amount is all that is required for the Medium cost alternative.

Exhibits 4.4-6 and 4.4-7 show alternative finance plan scenarios for the LPA with highway phasing alternative assuming the High capital cost estimate. Exhibit 4.4-6 illustrates a scenario that assumes the Base (Schedule 1) toll rate schedule; as a result the post-completion bond/loan contribution is limited to about $932 million. Given this toll bond/loan contribution, this scenario requires pre-completion tolling and residual toll revenues to meet funding requirements. The pre-completion toll contribution, which is assumed to be provided on a cash basis, is at its maximum level; given the finance plan

scenarios assume the Low estimate of net toll revenues. In order to generate the necessary level of residual tolls, which are also provided on a cash basis, the project completion schedule must be extended by a year. In comparison, Exhibit 4.4-7 illustrates a scenario that assumes the Toll Rate Schedule 3, which has toll rates 1.5 times the toll rates in the Base toll rate schedule (Schedule 1). As a result of the $265 million higher bond/loan capacity of Schedule 3, this finance plan scenario does not require any pre-completion toll revenues and does not have to extend the construction schedule to achieve its required level of residual toll revenues. Both scenarios require $400 million in federal highway discretionary funding. In addition, both of these finance plan scenarios require the assumed maximum amount of New Starts funds available for the light rail extension of $850 million.

LPA Alternative

Exhibits 4.4-7 and 4.4-8 show alternative finance plan scenarios for the LPA alternative assuming the Medium capital cost estimate. Exhibit 4.4-7 illustrates a scenario that assumes the Base (Schedule 1) toll rate schedule. This scenario requires pre-completion tolling and residual toll revenues to meet funding requirements. The pre-completion toll contribution is at its maximum level, given that these financial scenarios assume the Low estimate of net toll revenues. A relatively small amount of residual toll revenues completes the financing scenario without having to extend the construction schedule. Exhibit 4.4-8 illustrates a scenario based on Toll Rate Schedule 3. The amount of post-completion toll bonds required for this scenario ($1.14 billion) is less than the estimated bond capacity of Toll Rate Schedule 3. No use of pre-completion tolling or residual tolls is required. Both scenarios require $400 million in federal discretionary highway funds. In addition, both finance plan scenarios propose only about $809 million of New Starts funding for the light rail extension because that amount is all that is required for the Medium cost scenario.

Exhibit 4.4-9 illustrates a scenario for the LPA alternative assuming the High capital cost estimate and Toll Rate Schedule 3. This is the highest cost alternative considered. Given the baseline financial assumptions used in this FEIS, finance plan scenarios based on either the Base (Schedule 1) or Schedule 2 toll rates do not appear to be viable. The finance plan scenario shown assumes Toll Rate Schedule 3 and employs its entire borrowing capacity. It employs 3 years of pre-completion tolling on a cash basis and a small amount of residual toll revenues. To complete the plan requirements, this scenario assumes a $500-million federal discretionary highway contribution, $100 million more than any other scenario. The additional discretionary funds are employed in the later years of construction. The scenario does not use residual toll revenues in lieu of the additional discretionary highway funds, because they would be insufficient to meet funding requirements unless there was a multiple year extension of the construction schedule. As a variation, residual revenues can be used to a limited extent and thereby lower the amount of additional discretionary highway funds that would be needed. The scenario requires the assumed maximum of $850 million of New Starts funds for the light rail extension.

As stated earlier, the finance plan scenarios discussed above are illustrative of the financial tradeoffs between the alternatives. The finance plan will be refined during final design, and the final plan may differ from the scenarios discussed above.

Exhibit 4.4-4

Finance plan scenario for LPA with Highway Phasing: Medium Cost Estimate with low estimate of funding from Toll Rate Schedule 1 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
TOTAL PROJECT CAPITAL COST															
Highway AA, DEIS, Eng. Construction	$22.7	$26.0	$62.6	$103.8	$295.7	$389.3	$392.7	$398.6	$169.3	$192.3	$166.1	$75.7	$6.3		$2,301.0
Transit PE, Design and Construction[a]	$2.5	$4.0	$9.4	$31.7	$49.5	$145.7	$213.8	$227.0	$102.7	$49.5	$13.8				$856.3
Total Project Capital Cost	**$25.1**	**$30.0**	**$72.1**	**$135.5**	**$345.2**	**$535.0**	**$606.5**	**$625.6**	**$271.9**	**$241.8**	**$179.9**	**$81.0**	**$7.8**		**$3,157.3**
TOTAL PROJECT REVENUES															
Federal Discretionary Highway					$100.0	$100.0	$100.0	$100.0							$400.0
ODOT/WSDOT: Existing	$25.1	$30.0	$72.1	$20.3											$147.5
ODOT/WSDOT: Additional				$115.2	$195.7	$289.3	$292.7	$7.0							$900.0
Post-completion Toll Bond/ Loan Proceeds[b]								$291.6	$169.3	$192.3	$166.1	$75.7	$6.3		$901.2
Residual Toll Revenues															$0.0
Pre-completion Toll Revenues															$0.0
Section 5309 New Starts Funds[c]					$49.5	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$59.2		$808.7
Interim Borrowed Funds						$45.7	$113.8	$127.0	$2.7	($50.5)	($86.2)	($94.7)	($57.7)		$0.0
Total Project Revenues	**$25.1**	**$30.0**	**$72.1**	**$135.5**	**$345.2**	**$535.0**	**$606.5**	**$625.6**	**$271.9**	**$241.8**	**$179.9**	**$81.0**	**$7.8**		**$3,157.3**

a Transit costs include interim borrowing costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 1 and the Baseline finance structure does not require full financial capacity of this toll rate schedule.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

Exhibit 4.4-5

Finance Plan Scenario for LPA with Highway Phasing: High Cost Estimate with Low Estimate of Funding from Toll Rate Schedule 1 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
CAPITAL COST															
Highway PE, Final Eng. and Construction	$22.7	$27.0	$68.5	$112.7	$324.9	$430.2	$434.2	$441.2	$194.3	$225.4	$193.2	$63.3	$13.3	$13.0	$2,563.8
Transit PE, Design and Construction[a]	$2.5	$4.2	$10.8	$35.6	$54.5	$158.7	$233.2	$249.1	$111.7	$56.5	$17.4	$7.2	$2.5		$944.0
Total Project Capital Cost	**$25.1**	**$31.2**	**$79.3**	**$148.3**	**$379.4**	**$588.9**	**$667.4**	**$690.4**	**$306.0**	**$281.9**	**$210.6**	**$70.5**	**$15.7**	**$13.0**	**$3,507.8**
PROJECT REVENUES															
Federal Discretionary Highway						$100.0	$100.0	$100.0	$100.0						$400.0
ODOT/WSDOT: Existing	$25.1	$31.2	$79.3	$11.8											$147.4
ODOT/WSDOT: Additional				$136.5	$329.4	$329.9	$104.2								$900.0
Post Completion Toll Bond/Loan Proceeds[b]							$178.9	$284.2	$34.6	$225.4	$193.2	$15.9			$932.2
Residual Toll Revenues[b]												$47.4	$13.3	$13.0	$73.7
Pre-Completion Toll Revenues[b]						$36.6	$51.1	$57.0	$59.7						$204.4
Section 5309 New Starts Funds[C]					$50.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0		$850.0
Interim Borrowed Funds						$22.4	$133.2	$149.1	$11.7	($43.5)	($82.6)	($92.8)	($97.5)		$0.0
Total Project Revenues	**$25.1**	**$31.2**	**$79.3**	**$148.3**	**$379.4**	**$588.9**	**$667.4**	**$690.4**	**$306.0**	**$281.9**	**$210.6**	**$70.5**	**$15.7**	**$13.0**	**$3,507.8**

a Transit costs include interim borrowing costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 1 and the Baseline finance structure.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

Exhibit 4.4-6

Finance Plan Scenario for LPA with Highway Phasing: High Cost Estimate with Low Estimate of Funding from Toll Rate Schedule 3 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
CAPITAL COST															
Highway PE, Final Eng. and Construction	$22.7	$27.0	$68.5	$112.7	$324.9	$430.2	$434.2	$441.2	$194.3	$225.4	$193.2	$82.8	$6.9		$2,563.8
Transit PE, Design and Construction[a]	$2.5	$4.2	$10.8	$35.6	$54.5	$158.7	$233.2	$249.1	$111.7	$56.5	$17.4	$7.2	$2.5		$944.0
Total Project Capital Cost	**$25.1**	**$31.2**	**$79.3**	**$148.3**	**$379.4**	**$588.9**	**$667.4**	**$690.4**	**$306.0**	**$281.9**	**$210.6**	**$90.0**	**$9.3**		**$3,507.8**
PROJECT REVENUES															
Federal Discretionary Highway						$100.0	$100.0	$100.0	$100.0						$400.0
ODOT/WSDOT: Existing	$25.1	$31.2	$79.3	$11.8											$147.4
ODOT/WSDOT: Additional				$136.5	$329.4	$366.5	$67.6								$900.0
Post Completion Toll Bond/Loan Proceeds[b]							$266.6	$341.2	$94.3	$225.4	$193.2	$76.0			$1,196.8
Residual Toll Revenues												$6.7	$6.9		$13.6
Pre-Completion Toll Revenues[b]															$0.0
Section 5309 New Starts Funds[C]					$50.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0		$850.0
Interim Borrowed Funds						$22.4	$133.2	$149.1	$11.7	($43.5)	($82.6)	($92.8)	($97.5)		$0.0
Total Project Revenues	**$25.1**	**$31.2**	**$79.3**	**$148.3**	**$379.4**	**$588.9**	**$667.4**	**$690.4**	**$306.0**	**$281.9**	**$210.6**	**$90.0**	**$9.3**		**$3,507.8**

a Transit costs include the interim borrowings costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 3 and the Baseline finance structure.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

Exhibit 4.4-7

Finance Plan Scenario for LPA: Medium Cost with Low Estimate of Funding from Toll Rate Schedule 1 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
TOTAL PROJECT CAPITAL COST															
Highway AA, DEIS, Eng. Construction	$22.7	$26.0	$63.0	$104.7	$297.6	$393.7	$398.0	$406.5	$225.7	$284.1	$228.4	$83.0	$6.3		$2,539.7
Transit PE, Design and Construction[a]	$2.5	$4.0	$9.4	$31.7	$49.5	$145.7	$213.8	$227.0	$102.7	$49.5	$13.8	$5.3	$1.5		$856.3
Total Project Capital Cost	**$25.1**	**$30.0**	**$72.5**	**$136.4**	**$347.1**	**$539.4**	**$611.8**	**$633.5**	**$328.4**	**$333.6**	**$242.2**	**$88.3**	**$7.8**		**$3,395.9**
TOTAL PROJECT REVENUES															
Federal Discretionary Highway					$100.0	$100.0	$100.0	$100.0							$400.0
ODOT/WSDOT: Existing	$25.1	$30.0	$72.5	$19.8											$147.3
ODOT/WSDOT: Additional				$116.6	$197.6	$257.1	$246.9	$81.8							$900.0
Post Completion Toll Bond/Loan Proceeds[b]								$167.7	$166.0	$284.1	$228.4	$83.0	$3.0		$932.2
Residual Toll Revenues[b]													$3.3		$3.3
Pre-Completion Toll Revenues[b]						$36.6	$51.1	$57.0	$59.7						$204.4
Section 5309 New Starts Funds[C]					$49.5	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$59.2		$808.6
Interim Borrowed Funds						$45.7	$113.8	$127.0	$2.7	($50.5)	($86.2)	($94.7)	($57.7)		$0.0
Total Project Revenues	**$25.1**	**$30.0**	**$72.5**	**$136.4**	**$347.1**	**$539.4**	**$611.8**	**$633.5**	**$328.4**	**$333.6**	**$242.2**	**$88.3**	**$7.8**		**$3,395.9**

a Transit costs include the interim borrowings costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 1 and the Baseline finance structure.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

Exhibit 4.4-8

Finance Plan Scenario for LPA: Medium Cost Estimate with Low Estimate of Funding from Toll Rate Schedule 3 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
TOTAL PROJECT CAPITAL COST															
Highway AA, DEIS, Eng. Construction	$22.7	$26.0	$63.0	$104.7	$297.6	$393.7	$398.0	$406.5	$225.7	$284.1	$228.4	$83.0	$6.3		$2,539.7
Transit PE, Design and Construction[a]	$2.5	$4.0	$9.4	$31.7	$49.5	$145.7	$213.8	$227.0	$102.7	$49.5	$13.8	$5.3	$1.5		$856.3
Total Project Capital Cost	**$25.1**	**$30.0**	**$72.5**	**$136.4**	**$347.1**	**$539.4**	**$611.8**	**$633.5**	**$328.4**	**$333.6**	**$242.2**	**$88.3**	**$7.8**		**$3,395.9**
TOTAL PROJECT REVENUES															
Federal Discretionary Highway					$100.0	$100.0	$100.0	$100.0							$400.0
ODOT/WSDOT: Existing	$25.1	$30.0	$72.5	$19.8											$147.3
ODOT/WSDOT: Additional				$116.6	$197.6	$293.7	$292.1								$900.0
Post-completion Toll Bond/Loan Proceeds[b]							$5.9	$306.5	$225.7	$284.1	$228.4	$83.0	$6.3		$1,140.0
Residual Toll Revenues[b]															
Pre-completion Toll Revenues[b]															
Section 5309 New Starts Funds[c]					$49.5	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$59.2		$808.6
Interim Borrowed Funds						$45.7	$113.8	$127.0	$2.7	($50.5)	($86.2)	($94.7)	($57.7)		$0.0
Total Project Revenues	**$25.1**	**$30.0**	**$72.5**	**$136.4**	**$347.1**	**$539.4**	**$611.8**	**$633.5**	**$328.4**	**$333.6**	**$242.2**	**$88.3**	**$7.8**		**$3,395.9**

a Transit costs include the interim borrowings costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 3 and the Baseline finance structure; does not require full financial capacity of this toll rate schedule.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

Exhibit 4.4-9

Finance Plan Scenario for LPA: High Cost Estimate with Low Estimate of Funding from Toll Rate Schedule 3 in Millions of Year-of-Expenditure Dollars

Federal Fiscal Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	TOTAL
TOTAL PROJECT CAPITAL COST															
Highway AA, DEIS, Eng. Construction	$22.7	$27.0	$68.9	$113.7	$326.6	$434.0	$438.9	$448.9	$255.4	$325.2	$260.6	$90.6	$6.9		$2,819.3
Transit PE, Design and Construction	$2.5	$4.2	$10.8	$35.6	$54.6	$158.8	$233.3	$249.2	$111.7	$56.5	$17.4	$7.2	$2.5		$944.3
Total Project Capital Cost	**$25.1**	**$31.2**	**$79.8**	**$149.3**	**$381.2**	**$592.7**	**$672.2**	**$698.1**	**$367.1**	**$381.8**	**$278.0**	**$97.8**	**$9.3**		**$3,763.6**
TOTAL PROJECT REVENUES															
Federal Discretionary Highway					$100.0	$100.0	$100.0	$100.0	$25.0	$25.0	$25.0	$25.0			$500.0
ODOT/WSDOT: Existing	$25.1	$31.2	$79.8	$11.3											$147.4
ODOT/WSDOT: Additional				$138.0	$231.2	$370.5	$160.4								$900.0
Post Completion Toll Bond Proceeds							$127.5	$291.9	$170.7	$300.2	$235.6	$65.6	$5.3		$1,196.8
Residual Toll Revenues													$1.5		$1.5
Pre-Completion Toll Revenues							$51.1	$57.0	$59.7						$167.8
Section 5309 New Starts Funds[c]					$50.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0	$100.0		$850.0
Interim Borrowed Funds						$22.2	$133.3	$149.2	$11.7	($43.5)	($82.6)	($92.8)	($97.5)		$0.0
Total Project Revenues	**$25.1**	**$31.2**	**$79.8**	**$149.3**	**$381.2**	**$592.7**	**$672.2**	**$698.1**	**$367.1**	**$381.8**	**$278.0**	**$97.8**	**$9.3**		**$3,763.6**

a Transit costs include the interim borrowings costs incurred due to the assumed annual appropriations of New Starts funds.

b Assumes the Low estimate of net toll revenues for Toll Rate Schedule 3 and the Baseline finance structure.

c The assumed amount of New Starts funding and target dates scheduled are not guaranteed by FTA; funding amount and schedule will be negotiated as part of preparing the FFGA.

4.5 CRC Project Operations & Maintenance Costs

This section describes the operations and maintenance (O&M) costs and revenues for the LPA alternatives.[15] O&M costs and revenues for both the highway and transit components are addressed.

4.5.1 Highway Operations and Maintenance Costs

The highway O&M cost of the CRC project consists of (i) annual routine O&M costs and (ii) periodic rehabilitation and replacement (R&R) costs. Each is described below.

Annual Routine O&M Costs

Routine highway O&M costs consists of (i) facility costs (i.e., the annual costs of operating and maintaining the roadway and bridges) and (ii) toll collection costs (i.e., the annual costs of collecting tolls and maintaining toll equipment). These costs are summarized in Exhibit 4.5-1 and explained in the paragraphs that follow.

Exhibit 4.5-1
Routine Annual Highway/Tolling O&M Costs[a]

O&M Cost Component	Annual Cost
Annual Facility O&M Costs	
Annual Incident Response	$0.66
Routine Annual Roadway O&M	$1.21
Routine Annual Bridge O&M	$0.07
Total Annual Facility Costs	**$1.94**
Annual Tolling O&M Costs	
Fixed Toll Collection Costs	
Salaries and Benefits	$1.94
Invoicing: Printing and Postage	$3.30
Transponders, Supplies, Services, Rent	$3.58
Total Annual Tolling Fixed Costs	**$8.82**
Variable Toll Collection Costs[b]	
Base Toll Collection Cost	$0.10 per transaction
Surcharge for Pay-by-plate Toll Collection[c]	$1.22 per transaction
Bridge Insurance	
Annual Bridge Insurance Premium	$1.50

Source: Based on tolling costs estimated for WSDOT's SR 520 project, including the CRC project's share of collection center costs.

a In millions of 2010 dollars.

b Total cost depends on number of transactions, which differs by year and toll scenario. This transaction cost excludes any fees paid on credit card transactions.

c The actual charge for a pay-by-plate transaction depends on the method of toll collection; $1.22 is an average estimated cost.

15 The highway and transit operations and maintenance costs for the LPA and the LPA with highway phasing are identical. Accordingly, this section uses the term LPA alternatives to refer to both the LPA ad LPA with highway phasing options.

ROUTINE ANNUAL FACILITY O&M COSTS

Routine facility operations and maintenance generally includes such activities as regular crack sealing, cleaning, landscaping, sign repair, guardrail repair, pavement marking, snow removal, lighting, and other similar activities. Routine facility O&M costs for a high-volume section, such as the I-5 corridor, were estimated to cost $1.2 million per year (in 2010 dollars).[16] An additional $72,000 per year[17] is estimated to be required to operate and maintain the bridges (excluding the decks/roadways). In addition, a high-quality incident response program[18] is assumed for the new I-5 bridges to avoid unnecessary loss of toll revenue. This incident response program is estimated to cost $660,000 per year in 2010 dollars.

ROUTINE ANNUAL TOLLING O&M COSTS

The CRC project would incorporate an all-electronic toll collection system (ETC). With ETC, most toll collections would be through in-vehicle transponders linked to pre-paid accounts. An alternative payment method for users without transponders would employ a photographic license plate recognition system, sometimes referred to as a pay-by-plate system. In a pay-by-plate system, the vehicle's license plate would be recorded upon entering the bridge. The vehicle owner would then either contact the customer service center to make payment or wait to be invoiced via mail. An additional administrative fee or surcharge would be added to the base toll to cover the additional cost of collection.

The annual O&M cost for toll collection consists of (i) the fixed annual costs of tolling, (ii) the variable expenses of toll collection (assumed as a per transaction cost), and (iii) bridge insurance costs. The estimated $8.2 million (in 2010 dollars) of fixed costs include the wages and benefits of tolling division staff assigned to the bridges (including those at customer service centers), and associated supplies, equipment, and office expenses.[19]

Variable tolling O&M costs include those expenditures for toll collection, customer service, and enforcement activities that vary with the number of transactions.[20] For vehicles with transponders, this cost is estimated to be $0.10 per transaction. The surcharge for a pay-by-plate transaction depends on the method of toll collection. For a customer that pays before a notice of infraction (NOI) is issued, the additional collection cost (or surcharge) is estimated to be $0.80 (2010 dollars). Customers paying after an NOI is issued would pay an estimated $2.98 (2010 dollars). Customers that fail to pay at that point would pay a higher cost. The average pay-by-plate surcharge is estimated to be $1.22. Another variable cost (not shown in Exhibit 4.5-1) is the expense of processing credit/debit card transactions (i.e., bank processing fees).[21]

16 Estimated as $221,000 per mile (2010 dollars) for the 5.5-mile length of I-5 between Victory Boulevard and SR 500; applicable to both alternatives.

17 Based on historical costs for the I-205 bridge.

18 Cost estimate assumes one incident response vehicle in evening and early morning hours, and two incident response vehicles during daytime hours.

19 This estimate is based on estimates prepared by WSDOT for the SR 520 Bridge Replacement and HOV Program.

20 This analysis uses a per transaction methodology to estimate variable tolling costs. Depending on the tolling system and vendor contract employed, these costs might also be based on the number of user accounts.

21 Based on WSDOT's experience with the Tacoma Narrows Bridge, credit card fees are assumed to be 4.5 percent of total gross revenues for the first year and 3.45 percent thereafter.

The bridges would be insured for physical damage and for loss toll revenues in the event the bridges cannot be operated and tolls cannot be collected for a period of time (i.e., business interruption insurance). The annual premium for such insurance is estimated to be $1.7 million in 2010 dollars.

Highway/Tolling Periodic Rehabilitation and Replacement (R&R) Costs

Periodic R&R costs consist of (i) facility costs and (ii) tolling costs which are summarized in Exhibit 4.5-2. A 30-year cumulative total is shown for the major R&R expenses based on the applicable replacement/inspection cycle for that expense. These costs are explained in the paragraphs that follow.

Exhibit 4.5-2

Periodic Facility and Tolling Rehabilitation and Replacement Costs[a]

	Unit Cost	Replacement/ Inspection Cycle (years)	30-year Total
Facility Rehabilitation and Replacement			
Road/Deck Resurfacing	$18.20	15	$36.40
Bridge Inspection	$1.66	5	$9.96
Total			**$46.36**
Tolling Equipment Rehabilitation and Replacement			
Toll Collection Software	$1.33	7	$5.32
Tolling Central System Hardware	$3.64	5	$21.84
Tolling Field Hardware	$3.25	7	$13.00
Total			**$40.16**
Total Facility and Tolling R&R Costs			**$86.52**

a Costs are in millions of 2010 dollars. These costs are the same for the LPA and LPA with highway phasing.

Highway periodic R&R primarily consists of roadway resurfacing and bridge inspection. No major capital replacement of a bridge element is anticipated during the term of the toll bonds. Roadway resurfacing is estimated to cost about $18.2 million (2010 dollars) and to occur every 15 years. Bridge inspection is expected to cost $1.7 million (2010 dollars) and to occur every 5 years. For the first 30 years of operation, a total of $46.4 million (in 2010 dollars) in facility R&R costs is anticipated.

Tolling periodic R&R consists of upgrading and replacement of toll collection equipment and software at the bridges and in the central system. Central system hardware is expected to be replaced every 5 years at a cost of $3.6 million (in 2010 dollars) per replacement. The computer hardware on the bridges is expected to be replaced every 7 years at a cost of about $3.3 million (2010 dollars) per replacement. Toll collection system software is expected to be updated every 7 years at $1.3 million (2010 dollars) per update. For the first 30 years of operation, tolling R&R is expected to cost almost $40.2 million (2010 dollars).

4.5.2 Transit Operations and Maintenance Costs

The bi-state governance of transit operations and maintenance would be addressed through an agreement between C- TRAN and TriMet.[22] The agreement would leave existing governing structures in place; establish specific roles, responsibilities, and authorities for both parties; and require approval of significant O&M issues by both transit districts. The agreement would also establish a decision-making process between the two transit districts regarding critical light rail operating policies such as headways, span of service, and anticipated annual O&M cost as part of the annual budget approvals required of both districts.

Under the bi-state transit operations agreement, TriMet would provide light rail operators, light rail vehicle maintenance, and systems maintenance.[23] These costs would be allocated between the districts based on a sharing formula set forth in the bi-state agreement. Current discussions have focused on two alternative cost sharing formulas that proportion the local funds required from each transit district based on the relative length of the alignment associated with the district: (i) using the Jantzen Beach station as the dividing point, or (ii) using the state line as the dividing point. Each district would undertake and pay for all other operations and maintenance activities within its district boundaries. Park and ride maintenance, maintenance of way, and station security and maintenance within the C-TRAN district would be performed and paid for by C-TRAN, and TriMet would perform and pay for these activities in its district. Each district would be responsible for marketing and public communications within its own district, although it is anticipated that these efforts will generally be done in a coordinated and integrated manner.

It is anticipated that ownership of the transit improvements and assets would be transferred from WSDOT, the federal funding grantee, to TriMet and C-TRAN via a Master Transfer Agreement that is agreed to by FTA. It is also anticipated that WSDOT/ODOT would own the main bridge crossing, and the light rail right would operate within the bridge under an agreement with the WSDOT and ODOT. Continuing control agreements with the WSDOT and ODOT and the Cities of Vancouver and Portland would ensure the long-term operations of light rail on the southbound bridge and within the public right-of-way. These continuing control agreements would address any shared maintenance obligations for the public right-of-way.

Exhibit 4.5-3 shows the total corridor transit O&M costs for C-TRAN and TriMet in the year 2030 (in 2010 dollars). Total corridor costs include the cost of extending light rail service between the Expo Center station and the Clark College station, fixed-route bus service in the entire C-TRAN district,[24] and TriMet's bus service in North Portland. The C-TRAN bus service underlying the O&M costs shown in Exhibit 4.5-3 is at the level required for the CRC project.[25] C-TRAN recently enacted a 20-year plan that provides more transit service than required for the CRC project. The revenues required for this

22 Alternative approaches may be considered during final design.

23 The bi-state agreement is under development. This FEIS summarizes the current status of the discussions. These terms have not been agreed upon by either district and could change during final design.

24 Corridor O&M costs do not include the costs of paratransit and other non-fixed-route services.

25 Year 2030 transit O&M costs are based on the transit service levels described in the CRC Transit Technical Report.

additional service are addressed in the 20-year plan. The O&M cost shown above focuses solely on the financial requirements of the CRC project.

The O&M cost of the light rail extension between the Expo Center and Clark College in the year 2030 is estimated to be $5.01 million in 2010 dollars.[26] Exhibit 4.5-3 shows the division of light rail O&M costs between C-TRAN and TriMet based on both allocation formulae currently under discussion.

Exhibit 4.5-3
2030 Corridor Transit O&M Cost by Transit District in Millions of 2010 Dollars[a]

Cost Allocation Formula:			Jantzen Beach as Dividing Line			State Line as Dividing Line		
Year/Alternative:	**Existing O&M Cost**	**2030 No-Build O&M Cost**	**2030 LPA O&M Cost**	**Change from Existing**	**Change from No-Build**	**2030 LPA O&M Cost**	**Change from Existing**	**Change from No-Build**
C-TRAN								
C-TRAN Bus O&M	$29.73	$33.65	$29.04	($0.68)	($4.61)	$29.04	($0.68)	($4.61)
C-TRAN LRT O&M Cost	$0.00	$0.00	$4.24	$4.24	$4.24	$3.25	$3.25	$3.25
Total C-TRAN O&M Costs	$29.73	$33.65	$33.29	$3.56	($0.36)	$32.29	$2.57	($1.36)
TriMet								
TriMet Bus O&M Cost	$31.92	$34.96	$34.96	$3.04	$0.00	$34.96	$3.04	$0.00
TriMet LRT O&M Cost	$0.00	$0.00	$0.77	$0.77	$0.77	$1.76	$1.76	$1.76
Total TriMet O&M Costs	$31.92	$34.96	$35.73	$3.81	$0.77	$36.72	$4.80	$1.76

a O&M costs are same for LPA and LPA with highway phasing.

LRT = light rail transit

As shown in Exhibit 4.5-3, TriMet's 2030 corridor O&M costs for the LPA alternatives are $0.77 to $1.76 million (2010 dollars) higher than those for the No-Build alternative, depending on the cost allocation formula used. Compared to the No-Build, the LPA alternatives reduce C-TRAN's 2030 corridor O&M costs by $0.36 to $1.36 million dollars (2010 dollars), because the reduction in bus operation costs exceeds the added cost of light rail. However, C-TRAN's 2030 O&M costs for the LPA alternatives are $2.57 to $3.56 million dollars (2010 dollars) higher than the current O&M cost.

It is estimated that after 7 years of operation, TriMet and C-TRAN would begin to cumulatively receive about $300,000 in Fixed Guideway Modernization funds for the light rail transit extension between the Expo Center and Clark College. Unless otherwise needed for capital improvements or replacement on the CRC light rail transit extension, these funds would be available for preventive maintenance activities on the light rail extension to Clark College, reducing the shared O&M costs that must be funded with C-TRAN and TriMet revenues.

26 This incremental cost is measured as the difference in 2030 transit O&M costs between the LPA and No-Build alternatives.

4.6 Operation and Maintenance Funding Options

4.6.1 Highway O&M Revenue and Finance Plan

The finance plan assumes that routine annual facility/tolling O&M costs and facility/tolling periodic R&R costs would be paid with toll revenues. This helps ensure that the revenue-generating asset is maintained in a condition that allows for uninterrupted operation. The cost of periodic R&R of the facility and tolling equipment/systems would also be paid with toll revenues, but with different levels of priority. Similar to routine annual O&M costs, toll revenues pledged for debt repayment would exclude the amount of toll revenues needed to pay for rehabilitation and replacement of tolling equipment/systems. However, only toll revenues remaining after debt service is paid would be used to pay facility R&R costs. Thus, facility rehabilitation and replacement (such as resurfacing) would be deferred if there were insufficient toll revenues after debt repayment, unless other state or federal funds could be identified. If tolls are terminated, the highway O&M costs would be divided between the states and funded through the respective highway trust funds, as is the practice on the current bridge.

4.6.2 Transit O&M Revenue and Finance Plan

C-TRAN

C-TRAN currently receives about $35.2 million in continuing annual revenues. C-TRAN currently levies a 5/10th of 1 percent sales and use tax; it could impose an additional 4/10th of 1 percent tax under its Public Transportation Benefit Area (PTBA) authority with voter approval.[27] The sales and use tax is C-TRAN's largest revenue source, estimated to account for about $22 million in 2011, reflecting a significant decline due to the recent economic downturn. Passenger fares are C-TRAN's second largest revenue source, estimated to account for about $7 million in 2011. Grants, interest income, and other operating revenues comprise the remainder of C-TRAN's existing revenue sources.

C-TRAN's existing revenues are required for meeting C-TRAN's fixed-route and paratransit service costs. Existing C-TRAN resources are generally not available for meeting the additional O&M costs of system expansion. In order to fund the additional O&M costs of the CRC project, C-TRAN could seek voter approval to increase the sales and use tax under its basic PTBA authority. In 2011, with the effect of the economic turndown still lingering, each 1/10th of 1 percent sales and use tax is estimated to generate about $4.4 million within the full C-TRAN district.

Implementation of the CRC project would make C-TRAN eligible for the additional funding authorities provided by the State of Washington's High Capacity Transit (HCT) Act,[28] which includes a supplemental sales and use tax not to exceed 9/10th of 1 percent. This is separate from and in addition to the 9/10th of 1 percent sales and use tax allowed, with voter approval, under C-TRAN's PTBA authority. Under the HCT Act, a transit agency must receive voter approval of a "high-capacity transportation system plan and financing plan." Voter approval of a system plan that includes a tax increase

27 RCW 36.57A authorizes the creation of Public Transportation Benefit Areas (PTBA), and RCW 82.14.045 authorizes PBTAs, such as C-TRAN, to levy a sale and use tax, subject to voter approval.

28 RCW 81.104.

constitutes approval of the tax. The vote can be within the entire C-TRAN district or within a sub-district of C-TRAN; if the vote is within a sub-district that tax, if approved, would only be levied within the sub-district.

The C-TRAN board of directors has decided it will seek an additional 3/10th of 1 percent sales and use tax, which includes 1/10th of 1 percent under its HCT Act authority to fund high capacity transit operations, including the CRC light rail, and a 2/10th of 1 percent increase under its PTBA authority to fund core bus service. The election on the 2/10th of 1 percent increase for core bus service is scheduled for November 2011. It is anticipated that the 1/10th of 1 percent increase for high capacity transit operations will occur in 2012; whether this election will be district-wide or within a sub-district is currently undecided.

Exhibit 4.6-1 shows the net results of a 20-year cash flow analysis of C-TRAN operating costs and revenues, which is measured by the amount of the working reserves available to C-TRAN at the beginning of each fiscal year. The working reserve is measured in year-of-expenditure dollars and in the number of months of C-TRAN operations the reserve could fund. As shown, with the proposed sales and use tax rate increase, C-TRAN could fund its 20-year plan, including its vehicle replacement requirements and its share of the CRC light rail transit O&M costs, while maintaining a beginning working reserve consistent with FTA requirements for New Starts projects.

Exhibit 4.6-1

Beginning Working Capital 2010-2030 in Millions of Year-of-Expenditure (YOE) Dollars and Months of Operations[a]

	C-TRAN		TriMet	
	Beginning Working Capital[b]	Beginning Working Capital in Months of Operating Cost[c]	Beginning Working Capital[d]	Beginning Working Capital in Months of Operating Cost[e]
2010	$45.9	15.0	$57.5	2.0
2011	$43.9	13.5	$93.9	3.1
2012	$36.1	10.2	$97.6	3.0
2013	$35.3	9.1	$98.4	2.9
2014	$41.9	10.3	$90.1	2.6
2015	$44.9	10.3	$85.3	2.4
2016	$46.8	10.2	$92.4	2.4
2017	$48.8	10.0	$103.3	2.6
2018	$50.5	9.2	$120.5	2.9
2019	$43.9	7.0	$147.9	3.4
2020	$38.9	5.8	$179.9	4.0
2021	$36.7	5.3	$215.2	4.6
2022	$35.6	4.9	$267.5	5.5
2023	$34.6	4.5	$330.7	6.5
2024	$33.3	4.2	$408.6	7.7
2025	$32.1	3.8	$503.7	9.1
2026	$28.2	3.1	$615.5	10.8
2027	$29.9	3.2	$725.7	12.2

	C-TRAN		TriMet	
	Beginning Working Capital[b]	Beginning Working Capital in Months of Operating Cost[c]	Beginning Working Capital[d]	Beginning Working Capital in Months of Operating Cost[e]
2028	$30.8	3.1	$852.2	13.7
2029	$30.9	3.0	$981.8	15.2
2030	$31.2	2.8	$1,133.5	16.9

Source: C-TRAN results from C-TRAN 20-year Plan financial model (2011); TriMet results from TriMet 20-year Cash Flow Model (2011).

a Results are identical for LPA and LPA with highway phasing.

b Amount of reserves at beginning of year after deducting $3 million for insurance reserve. Assumes 2/10th of 1 percent increase in C-TRAN sales and use tax beginning in 2012 and another 10th of 1 percent increase in 2013.

c Months of annual operating costs that could be funded with beginning year reserve, excluding insurance reserve.

d Amount of unrestricted cash and cash equivalents available at beginning of fiscal year, assumes the authorized 0.1 percent increase in the payroll tax rate will start its 10-year phase-in beginning January 2015.

e Months of annual operating costs that could be funded with beginning year unrestricted cash.

TriMet

As of January 1, 2011, TriMet levies a 0.6918 percent tax ($6.918 per $1000) on the payrolls of all businesses and municipalities in its district. The payroll tax is dedicated to TriMet and is TriMet's largest source of operating revenue, accounting for almost 49 percent (about $207 million) of its operating revenues in FY 2011. While TriMet suffered a decline in payroll tax revenues during FYs 2009 and 2010 due to the economic downturn, it forecasts modest short-term growth in payroll tax revenues followed by a 4.7 percent long-term annual growth rate, excluding any increase in the payroll tax rate. TriMet has enacted an ordinance that increases the payroll tax rate annually by 1/100th of one percent until FY 2014, when it reaches a tax rate of 0.7218 percent. TriMet has the statutory authority to increase the payroll tax rate to 0.8218 percent over a 10-year period, which it anticipates implementing beginning in January 2015.

TriMet also currently also levies a 0.6918 percent tax on the gross profits earned within its district by self-employed individuals. After some short-term decline in self-employment tax proceeds, TriMet anticipates a long-term underlying (i.e., excluding any tax rate increase) growth rate of 4.5 percent. The self-employment tax rate is scheduled to increase at the same rate as the payroll tax. State of Oregon government offices located within TriMet's district boundaries are not subject to the payroll tax. Instead, the State makes in-lieu of tax payments to TriMet based on 0.6218 percent of their gross payrolls. Passenger revenues are TriMet's second largest revenue source. In FY 2011, passenger revenues are estimated to total about $98.0 million, or 23 percent of operating revenue. Grants, interest income, and other revenues comprise the remainder of TriMet's revenue sources.

Exhibit 4.6-1 shows the results of TriMet's 20-year cash flow, including its cost for the CRC light rail transit extension and the Portland-Milwaukie Light Rail Project. As shown, with the payroll tax increases, TriMet could fund its total system costs, including its vehicle replacement requirements and its share of the added CRC light rail transit O&M cost, while maintaining a working capital reserve consistent with FTA requirements for New Starts projects.

4.7 Implementation Issues

Implementation of the CRC project finance plan requires the following:

- WSDOT, ODOT, C-TRAN, and TriMet must enter agreements on roles and responsibilities for project development, construction, and capital funding that address such issues as governance, project management and decision-making, capital cost obligations, and contracting procedures. Final agreements are scheduled to be complete by summer 2013.
- Agreements between C-TRAN and TriMet must be executed that address roles and responsibilities for operation and maintenance of the light rail extension and related bus service, including such issues as fare reciprocity, service and transfer policy, and cost and revenue sharing. Final agreements are scheduled to be complete by summer 2013.
- Legislative/administrative approval of the ODOT and WSDOT funding contributions must be secured; scheduled by summer 2013.
- Washington legislative approval providing authorization to toll the I-5 bridges must be obtained; scheduled by spring 2012. Subsequent to tolling authorization, a formal process must be initiated to establish the toll rate schedule.
- Approval of a TIFIA loan would be sought in 2012 or 2013, depending on when legislative approvals are secured.
- Federal discretionary highway funds would be sought in the upcoming transportation reauthorization bill, and/or an application would be submitted seeking administrative approval of a federal highway discretionary grant.
- Federal highway and transit funds allocated to the project must be included in the Metro and RTC Metropolitan Transportation Improvement Programs (MTIP) and the ODOT and WSDOT State Transportation Improvement Programs (STIP).
- An election is required in the C-TRAN district to secure additional O&M funds. An election for core bus service funding is scheduled for November 2011, and a subsequent election for high capacity transit funding is anticipated in 2012.
- Subsequent to the FEIS, information required of an updated New Starts rating must be submitted to FTA, and a final design application must be submitted to and approved by FTA; the final design application is anticipated in 2012.
- A toll agreement between ODOT, WSDOT, and FHWA must be executed.

A finance plan must be submitted to FTA, and FTA must approve and execute a Full Funding Grant Agreement (FFGA) for the project; anticipated in 2013.

A formal finance plan must be approved by FHWA prior to construction.

4.8 Summary

The finance plan to be submitted to FTA and FHWA in response to New Starts and major projects requirements will be refined during final design but is anticipated to be generally consistent with the concepts described above. The capital finance plan requires tolling the I-5 bridges; starting no later than when the new southbound bridge opens and earlier under some scenarios. Toll revenues would support borrowings (bonds and/or a TIFIA loan) and the proceeds of the borrowings would be used for construction costs; some scenarios may also use a portion of the toll revenues on a cash basis. ODOT and WSDOT are expected to provide a significant state funding contribution. Federal assistance in the form of a New Starts funding contribution for light rail costs, discretionary federal highway funding grant, and TIFIA allocation would be sought. Toll revenues would be used to pay highway-related O&M costs. Transit operations and maintenance costs would be shared by TriMet and C-TRAN; C-TRAN is expected to request voter approval of an additional sales and use tax to meet its funding obligation.

This page intentionally left blank.